

1. Def: The smallest of all the upper bounds of a set S is called the supremum of the set S or the least upper bound (l.u.b) of the set S .

2. Def: The greatest of all the lower bounds of a set S is called the infimum of the set S or the greatest lower bound (g.l.b) of the set S .

Notation: If M and m are the supremum and infimum of a set S resp. we write,

$m = \inf S$ and $M = \sup S$.
 m and M are called the bounds of the set S , provided they exist.

Remark: (1) A set may or may not have the supremum and infimum.

(2) The supremum and infimum of a set may or may not belong to the set.

EXERCISES

1. Give examples of sets which are:
 - (i) Bounded
 - (ii) Not bounded
 - (iii) Bounded below but not bounded above,
 - (iv) Bounded above but not bounded below